COURSE OUTLINE: ELR724 - INSTAL.METHODS 2

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Approved: Corey Meunier, Chair, Technology and Skilled Trades

Course Code: Title	ELR724: INSTALLATION METHODS - LEVEL 2
Program Number: Name	6521: CONST & MTCE ELE INT 6541: IND.ELECT. - INTERM.
Department:	ELEC. APPRENTICES
Semesters/Terms:	20F, 21W
Course Description:	This lab-based course runs concurrently with and supports theory covered in Electrical Theory, Level II. Students will connect and test direct current (DC) motors and generators, single phase and three phase squirrel cage induction motors and associated control circuitry. Alternating current RLC circuits will also be tested in the lab.
Total Credits:	4
Hours/Week:	3
Total Hours:	30
Prerequisites:	There are no pre-requisites for this course.
Corequisites:	There are no co-requisites for this course.
Essential Employability Skills (EES) addressed in this course:	EES 3 Execute mathematical operations accurately. EES 4 Apply a systematic approach to solve problems.
Course Evaluation:	Passing Grade: 50%, D A minimum program GPA of 2.0 or higher where program specific standards exist is required for graduation.
Other Course Evaluation & Assessment Requirements:	Grade Definition Grade Point Equivalent A+ 90 - 100% 4.00 A 80 - 89% B 70 - 79% 3.00 C 60 - 69% 2.00 D 50 - 59% 1.00 F (Fail)49% and below 0.00 CR (Credit) Credit for diploma requirements has been awarded. S Satisfactory achievement in field /clinical placement or non-graded subject area. U Unsatisfactory achievement in field/clinical placement or non-graded subject area. X A temporary grade limited to situations with extenuating circumstances giving a student additional time to complete the requirements for a course. NR Grade not reported to Registrar`s office. W Student has withdrawn from the course without academic penalty.

In response to public health requirements pertaining to the COVID19 pandemic, course delivery and assessment traditionally delivered in-class, may occur remotely either in whole or in part in the 2020-2021 academic year.

Course Outcomes and Learning Objectives:

Course Outcome 1	Learning Objectives for Course Outcome 1
1. Connect and test various DC machine configurations.	1.1 Identify the mechanical parts, windings and wiring connections of DC machines. 1.2 Draw schematics and demonstrate wiring, starting, and control methods of series, shunt and compound DC motors. 1.3 Demonstrate methods for forward-reverse control of DC motors. 1.4 Explain and demonstrate reduced voltage starting techniques for DC motors. 1.5 Demonstrate dynamic braking to illustrate principles of Counter Electromotive Force 1.6 Use voltmeters and ammeters to determine torque and load characteristics of DC machines.
Course Outcome 2	**Learning Objectives for Course Outcome 2**
2. Connect and test single phase and three phase squirrel cage induction motors.	2.1 Identify the mechanical parts, windings, and wiring connections for single- and three-phase squirrel cage induction motors (SCIM). 2.2 Draw schematics and demonstrate manual and magnetic across-the-line starting techniques for single- and three-phase squirrel cage induction motors. 2.3 Draw schematics and demonstrate methods of jogging and plugging control of three-phase squirrel cage induction motors. 2.4 Demonstrate methods for forward and reverse control of single- and three-phase squirrel cage induction motors using push buttons, selector switches, limit switches, pilot lamps, and related devices. 2.5 Draw schematic circuit diagrams and demonstrate the control of a Single Phase Capacitor Start Dual Voltage Motor with a reversing drum switch and manual starter. 2.6 Draw schematic circuit diagrams and demonstrate push-button control of a Single Phase Capacitor Start Dual Voltage Motor with a reversing magnetic starter. 2.7 Connect, test, and describe the characteristics of RCL circuits. 2.8 State the procedures for installing and aligning belt driven motors.
Course Outcome 3	**Learning Objectives for Course Outcome 3**
3. Use test equipment to analyze alternating current RLC circuits.	3.1 Connect RLC circuits and measure current and voltages using multimeters and oscilloscopes. 3.2 Perform calculations to confirm lab measurements.

Evaluation Process and Grading System:

Evaluation Type	Evaluation Weight
Lab Reports	50%
Tests	50%

Date: October 6, 2020

Addendum: Please refer to the course outline addendum on the Learning Management System for further

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information.